

## **VI. Air Operations**

- A. Contract Preparation/Project Mapping
- B. R.F.P. Allocated Resources Heli-Jet Corporation Inc.
- C. Forest Service Organization/Structure
- D. G.I.S./GPS Systems
- E. O38A Carrier
- F. Virus Batch/Handling Protocol
- G. Aerial Application Accomplishments
- H. Safety
- I. Project Guidelines Operations/Monitoring
- J. Air Operations Recommendations

### **A. Contracting**

General: Items contracted for project included:

- \*Aerial application of TM-1 Biocontrol formulation
- \*Administration flights in support of aerial application
- \*Carrier 038 formulation
- \*In early December the project indicated that the amount of acres estimated 26,000 would be adequate based on projected larva density from fall cocoon/egg mass sampling. A variation quantities clause (+or- 20%) was used for the end products contract solicitation
- \*The contract was solicited as a request for proposals: technical capability was considered more significant than price when the proposals were evaluated.

Events chronology:

November 9,2000 – Request for contract action submitted to Contracting  
November 20 – January 6, 2000 – Solicitation/Contract package source selection plan and aviation safety plan drafted  
December 6, 2000 – Service contract act wage rates requested  
December 6-8, 2000 – Project site visit/spray block delineation/helibase/ICP locations identified and GIS/ARC info layers started  
December 11, 2000 – Source selection plan submitted to R.O.  
December 12, 2000 – Tussock Moth Contract specs drafted  
December 15, 2000 – PASP sent to Steve Baumann  
December 19, 2000 – PASP sent to Ken Ross  
December 20, 2000 – Contract specs sent to Contracting Officer  
January 5, 2001 – Source Selection plan approved  
January 9,2001 – PASP approved and sent to Contracting Officer  
January 29, 2001 – Request for proposals issued  
February 28, 2001 – Proposals received  
March 7-8, 2001 – Proposals evaluated by the selection board  
March 9, 2001 – Final board recommendation without negotiations  
March 20, 2001 – Award recommendation submitted through the Regional Office  
April 12, 2001 – Virus determination results completed (14%)  
April 19, 2001 – RFP awarded to Heli-jet Corporation Inc.  
May 16, 2001 – Heli-jet requested resource reallocation/oversight management change

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May 22, 2001 - First administrative flight for host type was completed

June 2, 2001 - Batch site set up

June 2, 2001 - First 038 arrived

June 3, 2001 - Application aircraft arrived

June 5, 2001 - Calibration

June 6, 2001 - Characterization

June 7, 2001 - First application

July 9, 2001 - Last application

### Contract Preparation and Mapping

11/20/00 - U.S.G.S. green 1:24,000 Quad maps were ordered through Captain Nautical in Portland – 138 Northwest Tenth Ave, Portland, OR. 97209. Phone (503) 227-1648.

11/25/00 - PBS series maps were ordered for each quad through Sue Steffan Regional Office (503-808-2874) Scale preferred 4"/mile 1:15,820.

On December 4<sup>th</sup>, 2000 a site visit was made to Winthrop, Wa. To determine locations of Helibase operations, staging areas, helispots, potential IC locations and to delineate spray blocks for the Mazama, Eight mile and Wolf Creek Analysis Units.

1/3/01 – Spray block delineation vicinity map sent to Carl Culham (C.O.) to be included in the RFP.

## B. Request for Proposal Resource allocation & Heli-Jet Org.

### Project Oversight:

Heli-Jet Corp. General Manager	Jim Reid
Project Manager (CDR)	Blaise Gaucher
Project Operations	Mitch Zulyevic
Helicopter N58HJ Pilot	Dave Boden
Helicopter N51AG Pilot	Bonnie Wilkens

## 2001 Tussock Moth

### Equipment Resources

#### AIRCRAFT

Spray Team	Make/Model	N#	Pilot	Owned By	Tank Capacity
1	Bell 205-1++	N58HJ	Boden	HeliJet	400
2	Bell UH-1H	N51AG	Wilkens	AgRotors	400
Admin	Bell 206-B III	N49589	Lovitt	Cascade	---

#### SUPPORT EQUIPMENT

Spray Team	Make/Model	Owned By	BatchCapacity	Fuel Capacity	Water Capacity
1	1993 Frtliner	McGregor	2000	500	500
2	1991 Int'l	AgRotors	2000	1500	300
2	Fuel Tender	Helijet	0	3000	0

Support Spray teams are comprised of helicopter pilot, certified aircraft mechanic and batch truck driver.

Batching facilities consisted of one 7,000 gallon cone storage tank, which was plumbed with 3-inch centrifugal pumps and certified cumulative meters. The batch site also was equipped with a portable mixing tank so that loads of 038A carrier and TM-Biocontrol-1 Can be mixed at the helibase.

#### GPS swathing systems

Both helicopters were equipped with Satlock GPS Swath-Guidance system.

Swath guidance systems utilize the overhead array of GPS satellites for navigating the flight lanes during aerial swathing. With the aid of a "light bar" and computer monitor, the pilot is able to visualize perfectly parallel flight lines, spaced according to preset swath offsets. The system is augmented by differential correction, which "corrects" errors created by the GPS satellites, environmental and atmospheric conditions. The second and equally important feature of the system is the recording capability. All flight, both spray and non-spray positions, is continuously recorded and can be played back utilizing the companion software, MapStar®, or printed to various media to provide documentation of treated areas.

Upon completion of each spray day all treatments were verified with review of the printed (or by monitor screen) map sets which displayed the swathing lanes and application for each spray block or cluster prior to approving the daily aircraft record which converts satisfactory applied gallons of virus formulation to acres treated for payment.

Aircraft spray tanks were Simplex 4000 systems with gear driven simplex pumps capable of handling the flow rates of 1 gallon per acre.

#### Helicopter N58HJ:

Spray boom had 8 beecomist atomizers with a total flow rate of 18.8 gallons per minute. The air speed of 80 mph with an effective swath width of 150 feet at and application rate of  $\frac{3}{4}$  gallon per acre equals an application rate of 25 acres per minute.

The micron sizes of the beecomist atomizers averaged between 180 to 400 microns.

(This includes the spread factor of times 2 for the O38A carrier).

The beecomist atomizers are electrical driven and requires considerable amps from the aircraft electrical system. The atomizers spin at the rate of 12,000 to 15,000 rpm.

Beecomst atomizers had considerable maintenance problems:

- a. Lost 2 beecomist due to bearing's
- b. Some of the Beecomist during testing showed that RPM varied after time due to mechanical wear
- c. The lower RPM causes larger spray drops

#### Helicopter N51AG:

Spray boom had 8 micron air a.u. 5000 atomizers, with wide angle blades which are wind driven. The total flow rate of 18.6 gallons per minute with application rate of  $\frac{3}{4}$  gallon per acre air speed of 80 mph and effective swath of 150 feet equals an application rate of 24.8 ac/minute.

The micron air atomizers gave a smaller spectrum of droplet size from 150-300 microns, which resulted in smaller and more drops per square centimeter. We had to adjust the blade angle to 40 degrees from 35 degrees, as the drops were too small to start with.

Micron-air atomizers had no maintenance problems and provided consistent VMD spectrum.

#### Aerial Application:

During spray operations- Kromacote spray cards were put out on every spray block to monitor spray deposition and coverage. It was noticed that with high humidities 90%+ that the droplet size, spread considerably, 800-1000 microns: as well as drops had a halo-effect on individual drops. Also it was noticed that cards put out during heavy dew point would gather moisture and will not provide accurate sample of droplet size and deposition.

During application of insecticide it is suggested that spray drops actually collect moisture when high humidities are prevalent. (90-99%)

### C. Forest Service Organizational structure (Air Operations)

Air Operations Section Chief	Art Anderson
COR	Art Anderson
Depty Air Operations	Sandy Summers
Aerial Observer/ASGS	Jim Trowbridge
ABRO	Terry Dyess/Paul Higgins
HEBM2	Mike Carney
HEMG	Lynn Wyatt
HEMG	Mike Poor
HEMG (T)	Kevin Morin
Ground Observer	Kevin Morin
Ground Observer	Steve Anderson
Ground Observer	Jim Harvey
Ground Observer	Ed Bridgeman

Air operation structure is based on Management of Contract inspection and oversight. (C.O.R.) IHOG prerequisites for aircraft management and aviation management to meet forest needs and project aviation safety plans – following were the positions required to manage 2 type II restricted category helicopters, and 1 type III standard category helicopter.

See organization chart - Appendix B (Page XI-11 of Appendices)

A few of the positions had to be resource ordered as no response to the outreach letters was received.

1. The first position was the A.B.R.O. The request was sent to the local Okanogan Dispatch center through NWCC for regional request. After 2 weeks no response was received so we went national with the request and received a candidate from Texas for a 14 day detail.
2. The second resource order was for a meteorologist from the Spokane Weather Service, we had to convince the office that the need was there for spray projects to warrant an on site I.M.E.T. The resource order was filled on multiple 14 day assignments through Spokane and Seattle National Weather service.

3. This service proved to be extremely critical due to the weather patterns in the Methow valley. It was especially critical to forecast rain on treatment areas to manage the required foliage/product drying time.

## **D. Electronic Data Interchange**

1. Spray block delineation was completed by air operations and entomologist. The polygons were entered into ARCinfo.
2. Once the shape files are built from spray block delineation they are transferred to a floppy disk, or they can be sent electronically. These shape files are loaded into Heli-jet's laptop computer. The pilots then open the shape files and manipulate the vertices if necessary.
3. The new shape files are saved as job files. These job files are loaded onto a PC card, taken to the aircraft, and loaded into the computer system. The aircraft's system creates a log file, which is saved on the PC card. This PC card is brought back to laptop and reviewed.
4. The log files are transferred to a floppy and given to the GIS person. Mapsets are then created using the Mapstar software for exporting the GPS swathing documentation.

Refer to Appendix E (Page XI-25 of Appendices) – for step by step instructions for GSI/GPS interface.

## **E. O38A Carrier**

The 038A carrier was purchased sole source from:

Omnova Solutions Inc.  
Performance Chemical Plant  
6008 High Point Road  
Greensboro N.C. 27407  
Contact: Annette Willard  
Tech. Contact: Henry Briley  
Phone No. (336-454-3141)

1. The first load was received on 6/2/01 and down loaded to the storage cone tank. A sample was taken from the top and bottom of the truck before unloading. No apparent settling of product. The 60 mesh screen had to be cleaned only once.
2. The second load had only 20 gallons through meter before the screen had to be cleaned. There was a lot of sediment that had separated out. After the screen plugged five times, they pumped 038A into the cone storage without a screen just to get it unloaded. Pictures were taken of the sediment with Digital Camera and sent to Heli-Jet, Carl Culham (COR), Dave Bridgwater, and Dick Reardon. After Blaise Gausher and Dick Reardon called Omnova it was found out that quality control procedures had not been followed at Omnova Solutions creating the separation of product causing sediments to clog the screens. This load was sent back to Omnova Solutions Inc. for Re-screening and batching.
3. The third load was satisfactory only cleaned the screen twice.
4. The fourth load was unloaded with no problem.

Disposal of extra 038 due to dropped blocks from lack of larva populations:

- a. Dick Reardon had no need for the 038A
- b. Heli-jet through Washington State Hazmat contacted a land fill at the Okanogan, no problem to bring it there to dispose of.
- c. Contractor hired a local truck to transport 038A to landfill. After discussion with the Hazmat coordinator, the landfill was going to use product for dust abatement. Rather than pay \$1300.00 for disposal at the landfill, the private vendor decided to put it on his driveway for dust abatement.

#### Virus Batch/Handling Protocol

#### 1. TM-1 BIOCONTROL PROJECT INVENTORY

Beginning project quantities:		
Lot #4	<b>17,185</b> gallons	<b>22,913</b> acres
Lot #5	<b>3,655</b> gallons	<b>4,873</b> acres
Lot #6	<b>1,525</b> gallons	<b>2,034</b> acres
Lot #7	<b>6,975</b> gallons	<b>9,300</b> acres
TOTALS:	29,340 gallons	39,120 acres

Quantities used on project:		
Lot #4	<b>7,443</b> gallons	<b>9,924</b> acres
Lot #5	<b>1,345</b> gallons	<b>1,793</b> acres
Lot #6	<b>510</b> gallons	<b>680</b> acres
Lot #7	<b>3,015</b> gallons	<b>4,020</b> acres
TOTALS:	12,313 gallon	16,417 acres

Remaining Quantities:		
Lot #4	<b>9,742</b> gallons	<b>12,989</b> acres
Lot #5	<b>2,310</b> gallons	<b>3,080</b> acres
Lot #6	<b>1,015</b> gallons	<b>1,353</b> acres
TOTALS:	13,067 gallons	17,423 acres

## TM-1 Biocontrol storage

The virus was stored in a tree cooler at the Methow Valley Ranger District in Twisp, Washington. The temperature was kept at 38 degrees. The virus was stored in the cooler, in transport the virus was put into a cooler that plugged into the cigarette lighters in the vehicle. The virus was only removed at the time of batching.

### 2. Pre-batching

The day before operations we would work with the contractor on which aircraft would be spraying which unit, the size loads the aircraft would be taking and would set up our batch accordingly with the right amount of virus per load. We always took extra packets to the helibase for back up or for changes in the daily operations to give us flexibility.

### 3. Batching

The contractor had tanks that were capable of mixing 1-2 helicopter loads at one time. The contractor would put 5 gallons of 038 in a bucket and mix the appropriate amount of virus for the load. They would use paddles attached to a drill for mixing. The approximate amount of time for mixing is 5 minutes in the 5-gallon bucket and then recalculates the batch in the large tank before pumping into aircraft.

Refer to Appendix C for detailed virus lot information to be added later to the Access Database

**PROTOCOLS FOR HANDLING TM-BIOCONTROL-1**

1. See Appendix J (page XI-60 of Appendices) for protocols

**F. Aerial Application Accomplishments**

- \*Aircraft calibration and characterization was completed on 6/06/01 for helicopter N51AG and N58HJ.
- \*The first spray blocks were released on 6/05/01 for treatment on 6/07/01. The last day of application was completed on 7/09/01.
- \*Aircraft were on site 33 calendar days.
- \*There were a total of 20 spray application days.

**Application Aircraft Production Summary**

<b>58HJ</b>			<b>51AG</b>			<b>TOTALS</b>		
AC	FH	AC/HR	AC	FH	AC/HR	AC	FH	AC/HR
8200	22.8	360	8490	20.1	422	16690	42.9	389

**Administration Helicopter summary**

<b>RECON</b>	<b>INSPECTION</b>	<b>REVENUE</b>	<b>TOTAL HRS</b>
2.0	18.0	7.6	27.6

The Access Data Base has 3 reports for review by analysis unit:

- a. Accomplishments
- b. Aircraft summary
- c. Daily summary

**G. SAFETY**

There was a total of 70.5 hours of flight without an incident or safecom issued.

There were a total of 225 sorties flown for the entire project.

- \*The emphasis on safety was discussed at the 0400 briefings, the 0900 de-briefings 1300 air ops strategy meetings, as well as when changes in spray ops plan or operations warranted a re-emphasis on risk assessment and safety emphasis.

- \*Following is the documentation of co-ordination with forest, region, military, and local flight services for airspace deconfliction:

Conference Call - June 1<sup>st</sup> regarding Tussock Moth Spray Project (**DRAFT 6/1/01**)

Participants: Art Anderson - Aviation Officer - Spray Project  
 Julie Stewart - Airspace Coordinator  
 Chief Mark Hall - NAS Whidbey  
 Sally Estes - Okanogan NF  
 Stephanie - Seattle ARTCC  
 Representative from Seattle Flight Service Station



## Douglas-fir Tussock Moth Project Final Report July 2001 Methow Valley

**Background:** There will be a Douglas Fir Tussock Moth spray project involving low level flying helicopters in Eastern Washington involving 28,000 acres from June 6<sup>th</sup> to July 12<sup>th</sup>..

Helicopters will be flying 50-75 feet above the canopy and will involve spray helicopters and observation helicopters. We are requesting that a NOTAM (L) or NOTAM (D) be put in place with an advisory regarding the flying. Flight time will basically be between 0430 - 0930 (Local time) and the “go/no go” decision will be based on weather conditions, relative humidity, winds, etc. Airspace involved includes IR-348 (NAS Whidbey) and the Okanogan B MOA.

### Discussion:

A decision to “go/no go” will be made daily at 1300 (Local). A “No go” decision could be made at 0400 AM (Local).

**Chief Hall:** We are not normally using IR 348 before 0900. We can schedule the route so that no one flies it before 10:00. Regarding the Okanogan B MOA, we can request that military aircraft stay at 1500 AGL until 10:00 AM. (Note - Seattle ARTCC agrees with 1500 AGL.)

**Flight Service Station:** We request verification each day with times, and location.

**Art:** Confirmed that TFR is 9 NM from Center point.

**Seattle Center :** Would also like daily notification.

**Okanogan NF:** Same with notification

### Decision:

- 1) Spray Project will contact ARTCC, NAS Whidbey, FSS and OKF Dispatch daily with “go/no go” decision at 1300 the day before.
- 2) Spray Project will contact same on day of spraying if decision is made to not fly.
- 3) Spray Project will provide briefing package, maps, etc for ARTCC, NAS Whidbey and Flight Service Station prior to beginning of spray project along with Points of Contact Listing.

## Points of Contact (POC)

### Spray Project:

Incident Dispatch – (509)-996-2814 (fax) (509) – 996-4051

Air Operations Chief –(509) – 996-2814 or 2809

### NAS Whidbey

POC - OS1 Navarro    Phone   360-257-2877    (Open until 1700 or leave msg with ans machine)  
                                    FAX    360-257-1283

### Seattle ARTCC

POC- Mission Coordinator      Phone   253-351-3523  
    FAX    253-351-3594

### Seattle Flight Service Station

POC - Todd Oldroyd              Phone   1-800-262-0616  
    Phone   206-764-6606  
    FAX    206-764-3341

**Okanogan NF Dispatch**

POC - Gary Reed

Phone 509-422-3581

FAX 509-422-2014

**AIRSPACE EMERGENCIES:**

Julie Stewart:

Phone 503-808-6728

(Cell) 503-780-0097

FAX 503-808-6799

HELICOPTER APPLICATION OF TM-BIOCONTROL-1 FOR  
THE SUPPRESSION OF THE DOUGLAS FIR TUSSOCK MOTH.

- PROJECT LOCATION:** Okanogan/Wenatchee National Forest located North of Twisp in the Methow Valley.  
Lat/Long for the project at center point within IR348.  
N48°34'36" / W 120.14.29 ( 9 mile radius )
- PROJECT DURATION:** It is estimated that the project duration will begin on June 6th last until July 12, 2001. ( duration is based on weather and larva development.) There will be approximately 28,000 acres scheduled for treatment.
- APPLICATION OPS:** Aerial application will occur when larva are developed and when weather conditions warrant application, less than 70 degrees temp, less than 10 mph winds, greater than 49% relative humidity and moisture not prevalent. The daily hours of operations will occur between 04:00 and 10:00 hours.
- Helicopter application will be applied from 50 – 150 feet AGL. There will be an aerial platform above the application aircraft for safety, communications and application efficacy. The aerial platforms will be 2 Bell 205's , 1 Hiller Soloy 12E and 1 Bell 206B 111.
- INCIDENT CONTACTS:** Dispatch – (509) 996-2814 Fax – (509) 996-4051  
Chief of Operations - Art Anderson (509) 996-2814

## **H. PROJECT GUIDELINES OPERATIONS/MONITORING**

The following guidelines as outlined in Appendix G of the EIS were adhered to under the Project Aviation Safety Plan, Air Operations, and Contractor's RFP.

### **G.2 Aerial Observation**

Aerial observation was incorporated within contract no. 53-046W-1-1090. A total of 27.6 flight hours were flown to accomplish:

- \*Airspace coordination
- \*Aerial hazards
- \*Communication monitoring
- \*Sensitive areas (T&E species, recreation sites, horse ranches, publics, non-Treatment areas, private lands)
- \*Spray deposition
- \*Weather parameters
- \*Overall application logistics

Spray standard: Refer to section C, Contract #53-046W-1-1090

### **Mechanical operations**

- \*F.S. management oversight VI air ops Section C
- \*RFP contractor oversight management

### **Accident Contingency Plan**

\*Refer to P.A.S.P Contract 53-046W-1-1090

\*Fire and Aviation management P.N.W. Region Aircraft crash, search, and rescue guide. Modified to comply with the Douglas Fir Tussock moth suppression project.

\*Spill management

Refer to project/contractor spill plan (safety section)

## **I. Air Operations Recommendations**

### **1. Personnel:**

\*Helicopter managers: One manager per 2 Type I Restricted Aircraft

\*Helicopter manager plus a trainee per 2 Type I Restricted Aircraft

\*IMET assigned to project

\*District work available when there is no spraying

\*Detail letters more specific to all duties on project

\*More notice on report days

\*Entomology: interface more with this group on doing plots and taking weather.

### **2. Contracting:**

\*A multi-year contract

\*Trade offs on oversight

\*Government furnished property – 038

### **3. Virus/Batch**

\*All packaging should be in the brown envelopes

due to size and quantities available for transport.